

# इंटरनेट

# मानक

## Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 6691 (1972): Cast Closed Roller Fairleads [TED 17: Shipbuilding]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



IS : 6691 - 1972

*Indian Standard*  
SPECIFICATION FOR  
CAST CLOSED ROLLER FAIRLEADS

UDC 629.12.014.24



© Copyright 1973

INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 1

Price Rs. 4.00  
**Gr 3**

January 1973

# Indian Standard

## SPECIFICATION FOR CAST CLOSED ROLLER FAIRLEADS

### Shipbuilding Sectional Committee, MCPD 1

<i>Chairman</i>	<i>Representing</i>
SHRI S. PARMANANDHAN	Ministry of Defence (NHQ)
 <i>Members</i>	
CDR S. P. AGARWALA	Ministry of Defence (DGI)
SHRI N. BALASUBRAMANIAM	Voltas Ltd, Bombay
SHRI R. S. MITAL ( <i>Alternate</i> )	
SHRI D. P. BHATIA	Mukand Iron & Steel Works Ltd, Bombay
SHRI Z. M. BHATE ( <i>Alternate</i> )	
SHRI A. S. BONDALÉ	Garden Reach Workshops Ltd, Calcutta
SHRI N. CHAKRABORTY	Ministry of Parliamentary Affairs, Shipping & Transport
SHRI S. RAGHAVAN ( <i>Alternate</i> )	
CHIEF MECHANICAL ENGINEER, THE COMMISSIONERS FOR THE PORT OF CALCUTTA	Inter Port Consultation Secretariat Cell, Calcutta
CHIEF MECHANICAL ENGINEER, BOMBAY PORT TRUST ( <i>Alternate</i> )	
SHRI P. L. D'ABREO	Kamath & D'Abreo, Cochin
SHRI R. A. KAMATH ( <i>Alternate</i> )	
SHRI V. G. DAMLE	AFCO Ltd, Bombay
SHRI R. D. PARALKAR ( <i>Alternate</i> )	
DIRECTOR OF NAVAL CONSTRUCTION	Ministry of Defence (NHQ)
DR M. K. GHOSH ROY	Directorate General of Shipping (Ministry of Parliamentary Affairs, Shipping & Transport)
SHRI B. HILL	Lloyd's Register of Shipping, Calcutta
SHRI D. B. IRANI	Cochin Shipyard Project, Cochin
SHRI T. R. VENKATESAWARAN ( <i>Alternate</i> )	
SHRI P. C. KUMAR	The Institution of Marine Engineers, Bombay
SHRI G. K. KURIYAN	Central Institute of Fisheries Technology, Cochin
SHRI M. VELU ( <i>Alternate</i> )	
SHRI KJELL LINDH	SF India Ltd, Calcutta
SHRI G. SINHA ( <i>Alternate</i> )	
SHRI S. MAJUMDAR	Directorate General of Technical Development
SHRI K. N. G. MENON	The Shipping Corporation of India Ltd, Bombay
CAPT R. D. KOHLI ( <i>Alternate</i> )	
SHRI I. N. PRADHAN	The Indian National Shipowners' Association, Bombay
SHRI T. S. RAJAN	Ericson & Richards, Bombay
REPRESENTATIVE	Indian Engineering Association, Bombay

(Continued on page 2)

**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 1

( Continued from page 1 )

<i>Members</i>	<i>Representing</i>
SHRI ANJAN ROYE	Institution of Marine Technologists, Bombay
SHRI E. R. DASTOOR ( <i>Alternate</i> )	
SHRI K. N. G. MENON ( <i>Alternate</i> )	
SHRI S. G. SCHAEFFER	American Bureau of Shipping, Bombay
SHRI K. SHARMA ( <i>Alternate</i> )	
SHRI D. S. SHETH	Hindustan Shipyard Ltd, Visakhapatnam
SHRI M. G. KUTTY ( <i>Alternate</i> )	
SHRI T. N. SUJAN	Larsen & Toubro Ltd, Bombay
SHRI K. S. SUBRAMANIAM,	Director General, ISI ( <i>Ex-officio Member</i> )
Officer on Special Duty ( <i>Secretary</i> )	

### Anchors and Anchoring, Towing and Mooring Equipment Subcommittee, MCPD 1 : 3

<i>Convener</i>	
SHRI D. P. BHATIA	Mukand Iron & Steel Works Ltd, Bombay
<i>Members</i>	
SHRI MADHUKAR M. CHILIMBI ( <i>Alternate to</i> Shri D. P. Bhatia )	
SHRI B. L. CHITLANGIA	Indian Chain Manufacturing Co, Calcutta
SHRI G. S. AGARWAL ( <i>Alternate</i> )	
DIRECTOR OF NAVAL CONSTRUCTION	Ministry of Defence ( NHQ )
SHRI B. HILL	Lloyd's Register of Shipping, Calcutta
SHRI B. S. NAIDU	Hindustan Shipyard Ltd, Visakhapatnam
SHRI JAI RAMAN ( <i>Alternate</i> )	
SHRI P. K. NEVATIA	The Indian Link Chain Manufacturers Ltd, Bombay
SHRI K. PARTHASARATHY	Ministry of Parliamentary Affairs, Shipping & Transport
SHRI I. N. PRADHAN	The Indian National Shipowners' Association, Bombay
SHRI S. C. ROY	Inter Port Consultation Secretariat Cell, Calcutta
SHRI S. G. SCHAEFFER	American Bureau of Shipping, Bombay
SHRI K. SHARMA ( <i>Alternate</i> )	
CAPT V. SUBRAMANIAM	The Shipping Corporation of India Ltd, Bombay

# *Indian Standard*

## SPECIFICATION FOR CAST CLOSED ROLLER FAIRLEADS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 30 October 1972, after the draft finalized by the Shipbuilding Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

**0.2** Cast roller fairleads are used on board ships for mooring of vessel and for such other purposes.

**0.3** The safe working load of cast rollers is based on the admissible breaking strength of ropes specified by competent authority under whose rules the vessel is constructed.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS:2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

### 1. SCOPE

**1.1** This standard specifies the material and dimensions for cast closed roller fairleads.

### 2. TERMINOLOGY

**2.0** For the purpose of this standard, the following nomenclature and definitions shall apply.

**2.1 Nomenclature** — The nomenclature of the fairleads shall be as shown in the figure in Table 2.

**2.2 Nominal Size** — The nominal size of the cast roller fairleads is the safe working load in kN† of the roller.

---

\*Rules for rounding off numerical values (*revised*).

†1 kN  $\approx$  1/10 tonnes force.

**2.3 Nominal Diameter** — The nominal diameter of the roller is the minimum diameter  $D$  as shown in figure in Tables 1 and 3.

### 3. MATERIAL

**3.1** The material used for the various parts of cast closed fairleads shall be as shown below:

<i>Sl No.</i>	<i>Name of Part</i>	<i>Material</i>	<i>Material Conforming to</i>
i)	Roller for nominal size 50 to 600	Grade 20 Cast iron	IS : 210-1970*
	Roller for nominal sizes 1 000 and 1 600	Cast steel	IS : 1030-1962† IS : 2985-1964‡
ii)	Pivot pin	Steel	IS : 2073-1970§
iii)	Bush	Bronze	IS : 306-1968
iv)	Thrust washer	Bronze	IS : 306-1968
v)	Seat	Steel	IS : 3039-1965¶
vi)	Support	Steel	IS : 3039-1965¶
vii)	Grub screw	Steel	IS : 1367-1967**
viii)	Locking plate	Steel	IS : 1731-1971††
ix)	Screw for locking plate	Steel	IS : 1367-1967**
x)	Oiler	Brass	IS : 319-1968‡‡ or IS : 410-1967§§

\*Specification for grey iron castings ( *second revision* ).

†Specification for steel castings for general engineering purposes ( *revised* ).

‡Specification for steel castings for ship's structure.

§Specification for carbon steel black bars for production of machined parts for general engineering purposes ( *first revision* ).

||Specification for tin bronze ingots and castings ( *second revision* ).

¶Specification for structural steel ( shipbuilding quality ).

\*\*Technical supply conditions for threaded fasteners ( *first revision* ).

††Dimensions for steel flats for structural and general engineering purposes ( *first revision* ).

‡‡Specification for free cutting brass rods and sections ( *second revision* ).

§§Specification for rolled brass plate, sheet, strip and foil ( *second revision* ).



## 4. DIMENSIONS

4.1 The dimensions of various parts of the cast closed roller fairleads shall be as shown below:

<i>Sl No.</i>	<i>Name of Part</i>	<i>Reference to</i>
i)	General arrangement	Table 1
ii)	Main dimensions	Table 2
iii)	Roller	Table 3
iv)	Pivot pin and thrust washer	Table 4
v)	Grub screw	IS : 2388-1971*
vi)	Screw for locking plate	IS : 1363-1967†
vii)	Oiler, Type A	IS : 5559-1970‡

## 5. TOLERANCES

5.1 The tolerance in millimetre on dimensions of grey cast iron rollers shall conform to IS : 5519-1969§.

5.2 The tolerance in millimetre on dimensions of cast steel rollers shall conform to IS : 4897-1968||.

5.3 The tolerances on the dimensions of machined parts where they have not been specified in this standard shall be of extra coarse grade specified in IS : 2102-1969¶.

## 6. DESIGNATION

6.1 Cast closed roller fairleads shall be designated by the nominal size, a material and the number of this standard.

*Example:*

Closed roller fairlead of nominal size 150 of cast iron shall be designated as:

Closed Roller Fairlead 150 CI IS : 6691

\*Specification for slotted grub screws (*first revision*).

†Specification for black hexagon bolts, nuts and lock nuts (dia 6 to 39 mm) and black hexagon screws (dia 6 to 24 mm) (*first revision*).

‡Specification for oilers.

§Deviations for untoleranced dimensions of grey iron castings.

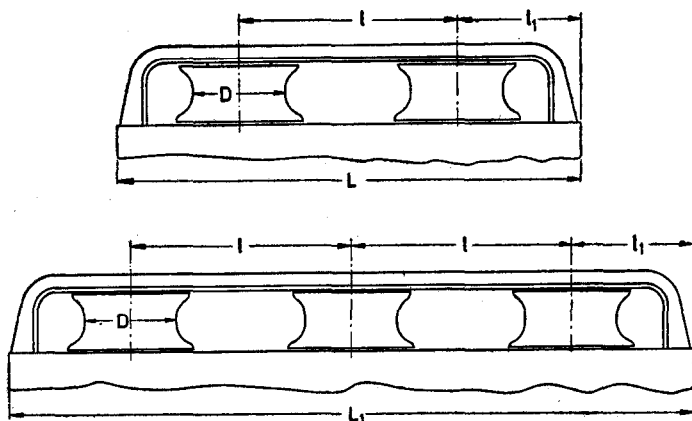
||Deviations for untoleranced dimensions and weight of steel castings.

¶Allowable deviations for dimensions without specified tolerances (*first revision*).

**TABLE 1 GENERAL ARRANGEMENT OF ROLLERS  
(APPROXIMATE DIMENSIONS)**

( Clause 4.1 )

All dimensions in millimetres.



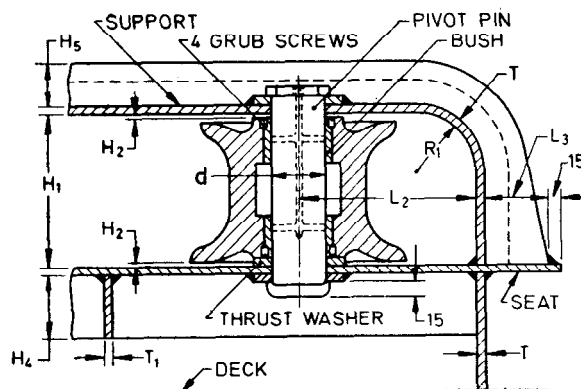
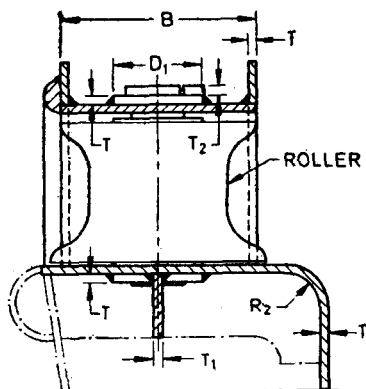
NOMI- NAL SIZE	D	L	L <sub>1</sub>	l	l <sub>1</sub>	DIAMETER OF MOORING LINE (REFERENCE)			
						*Wire rope		†Manila rope	‡Synthetic
						6 × 24	6 × 37	(3 Strand Grade I)	fibre rope (Grade I)
50	100	760	1 070	310	225	10	10	24	14
100	125	865	1 230	365	250	14	14	36	20
150	160	1 060	1 500	440	310	18	16	44	24
250	200	1 220	1 750	530	345	24	20	56	36
400	250	1 460	2 100	640	410	28	28	76	44
600	320	1 715	2 510	795	460	36	32	96	56
1 000	400	2 090	3 060	970	560	48	44	—	72
1 600	500	2 510	3 700	1 190	660	—	56	—	96

\*Diameter according to IS : 2581-1968 Specification for round strand galvanized steel wire ropes for shipping purposes (first revision).

†Diameter according to IS : 1084-1969 Specification for manila ropes (second revision). Diameter for nominal size 600, manila ropes (9 strands).

‡Diameter of synthetic rope is based on breaking load equal to 1.4 times the safe working load of fairleads, Grade I according to IS : 4572-1968 Specification for polyamide (nylon) filament ropes (hawser-laid).

All dimensions in millimetres.



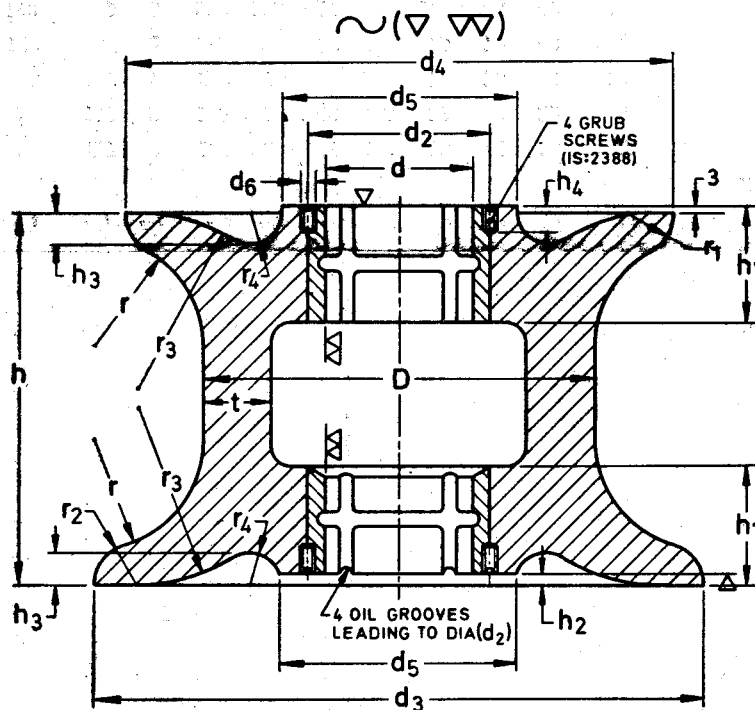
NOMINAL SIZE	$B$	$d$	$D_1$	$H_1$	$H_2$	$H_3$	$H_4$	$H_5$	$L_2$	$L_3$	$R_1$	$R_2$	$T$	$T_1$	LOCKING PLATE				
															$A$	$B_1$	$C$	$T_2$	$d_1$
50	160	43	80	127	2	135	50	40	150	50	60	30	8	6	23	38	26	8	M6
100	190	52	90	152	2	165	50	40	175	50	60	30	8	6	24	40	27	8	M6
150	230	63	105	177	2	200	75	50	210	75	70	40	10	8	26	60	35	10	M8
250	280	75	120	197	2	240	75	50	240	75	70	40	14	10	30	64	40	10	M8
400	340	90	140	229	3	280	100	75	280	100	80	40	14	10	35	90	60	12	M10
800	425	108	200	259	3	335	100	75	325	100	80	60	18	14	42	95	64	16	M10
1 000	520	125	260	291	4	380	110	90	400	125	90	60	20	16	50	115	80	18	M12
1 600	640	142	340	331	4	430	110	90	500	125	100	60	22	18	60	135	100	22	M12

\*To be determined suitably according to the ships' side line.

**TABLE 3** DIMENSIONS OF ROLLER

( Clause 4.1 )

**Al dimensions in millimetres.**

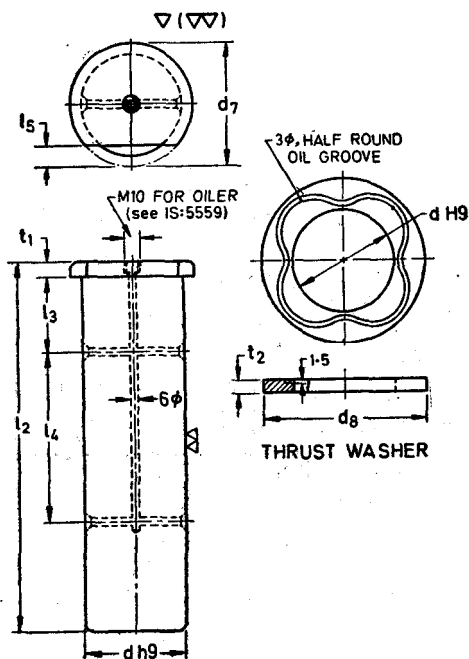


NOMINAL SIZE	$D+1$ 0	$d$ E <sub>9</sub>	$d_2$ H <sub>7</sub> /r <sub>6</sub>	$d_3$	$d_4$	$d_5$	$h$	$h_1$	$h_2$	$h_3$	$r$	$r_1$	$r_2$	$r_3$	$r_4$	$t$	GRUB SCREW $d_6 \times h_4$
50	100	43	58	170	160	80	120	35	5	8	35	16	13	70	12	25	M4×8
100	125	52	67	205	190	90	145	45	5	10	40	18	15	75	13	27.5	M4×8
150	160	63	79	255	230	105	170	55	5	12	45	20	18	82	14	30	M6×12
250	200	75	92	310	280	120	190	60	6	16	55	24	21	90	16	35	M6×12
400	250	90	108	380	340	140	220	70	6	20	65	28	25	100	18	40	M8×20
600	320	108	127	460	425	200	250	80	7	25	80	34	29	115	21	47	M8×20
1 000	400	125	146	560	520	260	280	85	8	32	95	40	32	130	24	55	M8×20
1 600	500	142	165	680	640	340	320	95	8	40	115	48	36	150	28	65	M8×20

TABLE 4 DIMENSIONS FOR PIVOT PIN AND THRUST WASHER

( Clause 4.1 )

All dimensions in millimetres.



NOMINAL SIZE	$d$	$d_7$	$l_2$	$l_3$	$l_4$	$l_5$	$t_1$	THRUST WASHER	
								$d_8$	$b_2$
50	43	53	166	33	73	10	10	80	7
100	52	62	195	40	90	10	10	90	7
150	63	75	225	48	107	10	10	105	7
250	75	90	263	55	125	15	10	120	8
400	90	110	295	60	145	20	12	140	9
600	108	132	342	67	168	25	15	200	10
1 000	125	155	381	70	190	30	18	260	12
1 600	142	177	412	75	210	40	22	340	12

## **7. GENERAL REQUIREMENTS**

**7.1** The cast roller shall be reasonably free from casting defects such as blow holes, inclusions, etc.

**7.2** The surface finish shall be 12·5 to 30 when microns assessed according to IS : 3073-1967\*.

**7.3** All sharp corners of frame shall be removed.

## **8. MARKING**

**8.1** Roller fairleads shall be marked with their designation on the underside of the roller.

**8.1.1** Roller fairleads may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

---

\*Assessment of surface roughness.

# INDIAN STANDARDS ON MOORING EQUIPMENT

IS:

3381-1965	Cast vertical bollards with and without lugs
4374-1967	Mild steel fabricated vertical bollards with and without lugs
4690-1968	Mooring buoy shackles
5112-1969	General requirements and testing of ac cargo winches ( for ship-board use )
5113-1969	General requirements and testing of ac mooring winches ( for ship-board use )
5130-1969	Drums fitted to cargo and mooring winches
5240-1969	Cast skew bollards
5625-1970	Cruciform bollards
5628-1970	Cast deck-end rollers
6195-1971	Cast open chocks
6204-1971	Cast open roller fairleads

---

## INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 1

**Telephone : 27 01 31 ( 20 lines )**

**Telegrams : Manaksanstha**

### Branch Offices:

• 'Sadhna', Nurmohamed Shaikh Marg, Khanpur  
F Block, Unity Bldg, Narasimharaja Square  
534 Sardar Vallabhbhai Patel Road  
5 Chowringhee Approach  
5-9-201/2-A ( First Floor ), Chirag Ali Lane  
117/418 B Sarvodaya Nagar  
54 General Patters Road

	Telephone
Ahmedabad 1	2 03 91
Bangalore 2	2 76 49
Bombay 7	35 69 44
Calcutta 13	23-08 02
Hyderabad 1	3 44 35
Kanpur 5	82 72
Madras 2	8 72 78